

P-3.6 Compare elastic and inelastic collisions in terms of conservation laws.

Revised Taxonomy Level 2.6 B (Compare conceptual knowledge)

Key concepts

Elastic collisions

Inelastic collisions

Students did not address the principles of momentum in physical science

- ❖ Understand the law of conservation of momentum “when no net external forces are acting on a system of objects, the total vector momentum of the system remains constant.”
 - ◆ Apply the law of conservation of momentum to describe (both qualitatively and quantitatively) the motion of objects which collide
 - ◆ in one dimension
 - ◆ both elastically and in-elastically
- ❖ Apply the law of conservation of energy to describe (both qualitatively and quantitatively) the motion of objects which collide
 - in one dimension
 - both elastically and in-elastically
- ❖ Explain the relationship between the conservation of energy and the conservation of momentum in for elastic and inelastic collisions (in one dimension)

College preparatory differentiation

- ❖ Apply the laws of conservation of momentum and conservation of energy to describe (both qualitatively and quantitatively) the motion of objects which collide in two dimensions.

❖ Assessment

As the indicator states, the major focus of assessment is to compare (detect correspondences) in elastic and inelastic collisions with regard to the law of conservation of momentum and the law of conservation of energy.

Because the indicator is written as conceptual knowledge, assessments should require that students understand the “interrelationships among the basic elements within a larger structure that enable them to function together.” In this case, assessments must show that students can construct cause and effect statements which differentiate the ways that both the energy of the system and the momentum of the system are conserved during elastic and inelastic collisions.